

corrosion of the power receiving means, and preventing the power storage means from leaking into the body.

[0044] Preferably, the power receiving means and/or the power storage means are each or both separate from the medical device. An advantage of this feature is that a modular design may allow for easier maintenance of the different means, allowing for easier implantation of the different means and allow for optimum positioning of each of the means, which may depend on shape of the implanted location, need, and coupling efficiency. Furthermore, the modular design may allow for one or more of the elements to be easily replaced when required. Advantageously, the modular elements may allow for specific tailoring of implant locations for specific patients, for example patients with anatomical defects. Therefore, the modular design may provide for a more versatile implementation compared to current devices.

[0045] Preferably, the intra-corporeal medical device further comprises implantable means for supplying power received by the power receiving means to the power storage means. More preferably, the means for supplying power is a power converter, preferably an AC-DC converter.

[0046] According to a third aspect of the invention, there is provided an implantable wireless power receiving device for a rechargeable power supply as described above.

[0047] According to a fourth aspect of the invention, there is provided an implantable power storage device for a rechargeable power supply as described above.

[0048] Preferably, the power storage device comprises a material that does not inhibit magnetic flux.

[0049] Preferably, the material may be a magnetic material, air, or a non-magnetic material that does not inhibit magnetic flux.

[0050] Preferably, the power storage device is substantially cylindrical.

[0051] Preferably, the magnetic material extends along part of or along the whole of the longitudinal axis of the power storage means.

[0052] Preferably, the magnetic material comprises iron and/or ferrite.

[0053] According to a fifth aspect of the invention, there is provided an extra-corporeal power transmitting device arranged and configured to supply power to a rechargeable power supply, comprising means for wirelessly transmitting power, wherein the power transmitting means is arranged and configured to transmit power to an implanted power receiving means.

[0054] Preferably, the power transmitting means comprises an electromagnetic coil.

[0055] Preferably, the power transmitting means and an implantable power receiving means are aligned to facilitate magnetic coupling, thereby enabling power transmission between the extra-corporeal power transmitting means and the implantable power receiving means.

[0056] Preferably, the longitudinal axis of the electromagnetic coil is arranged and configured to be substantially parallel to the longitudinal axis of an implantable power receiving means.

[0057] Preferably, the extra-corporeal power transmitting device further comprises means for positioning the power transmitting means relative to the implanted power receiving means to enable magnetic coupling. This may have an advantage of facilitating efficient magnetic coupling, reducing the time required for charging the implanted power

receiving means, and reducing heat generated by the implanted power receiving means and the extra-corporeal power transmitting device.

[0058] Preferably, the positioning means, in use, is positioned around the torso of the patient. More preferably, the positioning means, in use, is positioned around the abdomen of the patient. Alternatively, one could envisage a positioning means which, in use, is positioned around one of the patient's limbs. For example, the rechargeable power supply may be positioned in the arm of the patient, and the extracorporeal power transmitting means may be positioned around the arm.

[0059] Preferably, the positioning means is substantially tubular, more preferably a wearable garment, more preferably an arm band, leg band, vest and/or belt.

[0060] Preferably, the power transmitting means and/or the positioning means are each or both extendible. I.e. each or both means may comprise or consist of an extendible material. This may have an advantage of allowing the device to form around the body of the patient without moving/slipping off the patient, which could otherwise affect the alignment of the device.

[0061] According to a sixth aspect of the invention, there is provided a method for supplying power to an intra-corporeal medical device, comprising the step of implanting a rechargeable power supply in a patient.

[0062] Preferably, the method further comprises the step of wirelessly transmitting power from an extra-corporeal power transmitting device to the implanted power receiving means.

[0063] Preferably, the method further comprises the step of supplying the power received by the power receiving means to the power storage means.

[0064] Preferably, the power receiving device and/or the power storage means are, in use, positioned in the circulatory system, preferably in a vein or an artery, more preferably within the inferior vena cava.

[0065] Preferably, the method for supplying power to the intra-corporeal medical device may be performed by percutaneous or transcatheter procedures.

BRIEF DESCRIPTION OF THE DRAWINGS

[0066] The invention will be further described with reference to the drawings and figures, in which:

[0067] FIG. 1 is a schematic representation of a rechargeable power supply system for an intra-corporeal medical device implanted within the body of a patient according to aspects of the present invention;

[0068] FIG. 2 is a schematic representation of a further representation of a rechargeable power supply for an intra-corporeal medical device according to aspects of the present invention;

[0069] FIG. 3 is a simplified block diagram illustrating functional blocks of a rechargeable power supply for an intra-corporeal medical device according to aspects of the present invention;

[0070] FIG. 4 is a simplified block diagram illustrating functional blocks of an extra-corporeal power supply for charging the rechargeable power supply in FIGS. 1-3 according to aspects of the present invention;

[0071] FIG. 5 is a schematic representation of an intra-corporeal medical device comprising a rechargeable power supply according to aspects of the present invention;